

Amendments to the Claims:

Claim 1 (Previously amended). A method of reducing the effects of copy protection signals in one or more selected video lines of a video signal being supplied to a recorder or television (TV) set, wherein the copy protection signals include sync and/or pseudo sync pulses together with respective automatic gain control (AGC) pulses, with the sync/pseudo pulses having a given small position separation, which can be zero separation, from the respective AGC pulses, comprising:

providing the sync/pseudo sync pulses with the trailing edge thereof having the small position separation from the leading edge of respective AGC pulses, wherein the small position separation maintains the copy protection effect; and

shifting the relative position of either the trailing edge of the sync/pseudo sync pulses or the leading edge of the respective AGC pulses with respect to each other, or shifting the relative positions of the trailing edge of the sync/pseudo sync pulses and the leading edge of the respective AGC pulses, to provide a modified position separation between the trailing edge of the sync/pseudo sync pulses and the leading edge of the respective AGC pulses sufficient to reduce the effects of the copy protection signals.

Claim 2 (Previously amended). The method of claim 1 including:

delaying the leading edge of the AGC pulses relative to the trailing edge of the respective sync/pseudo sync pulses by a time period commensurate with said modified position separation.

Claim 3 (Previously amended). The method of claim 2 wherein the delay is in the region of 1.0 to 2.5 microseconds.

Claim 4 (Previously amended). The method of claim 1 including:

advancing the trailing edge of the sync/pseudo sync pulses relative to the leading edge of the respective AGC pulses by a time period commensurate with said modified position separation.

Claim 5 (Previously amended). The method of claim 4 wherein the advancement is in the region of 1.0 to 2.5 microseconds.

Claim 6 (Previously amended). The method of claim 1 including:

delaying the AGC pulses in the region of 0.5 to 1.5 microseconds relative to respective sync/pseudo sync pulses, while advancing the trailing edge of the sync/pseudo sync pulses in the region of 0.5 to 1.5 microseconds relative to the delayed respective AGC pulses to obtain said modified position separation.

Claim 7 (Previously amended). The method of claim 1 including:

narrowing the durations of the sync/pseudo sync pulses and/or the respective AGC pulses, in combination with the shifting of the relative positions of the sync/pseudo sync and respective AGC pulses.

Claim 8 (Previously amended). The method of claim 1 wherein the video level of said modified position separation is at a video level in the region of blanking level.

Claim 9 (Previously amended). The method of claim 1 including:

delaying the AGC pulse relative to the respective sync/pseudo sync pulse to provide a modified position separation that partially defeats the effects of the copy protection signals;
and

narrowing the AGC pulse an amount sufficient to defeat or substantially reduce the effects of the copy protection signals.

Claim 10 (Previously amended). The method of claim 1 including:

advancing the trailing edge of the sync/pseudo sync pulses to provide a narrowed sync/pseudo sync signal;

delaying the leading edge of the respective AGC pulses to provide a narrowed AGC pulse; and

wherein the resulting modified position separation between the sync/pseudo sync pulses and respective AGC pulses is sufficient to reduce the effects of the copy protection signals.

Claim 11 (Previously amended). The method of claim 1 including:

delaying the position of the AGC pulse;

advancing the trailing edge of the sync/pseudo sync pulses to narrow the sync/pseudo sync pulse; and

wherein the resulting modified position separation between the sync/pseudo sync pulses and the respective AGC pulses is sufficient to reduce the effects of the copy protection signals.

Claim 12 (Previously amended). The method of claim 1 including:

removing all or sufficient portions of the copy protection signals of sync/pseudo sync and/or respective AGC pulses;

inserting new sync/pseudo sync pulses in advance of the position of the original sync/pseudo sync pulses that are removed; and/or

inserting new AGC pulses in delayed relation to the position of the original AGC pulses;

thereby providing said modified position separation sufficient to reduce the effects of the copy protection signals.

Claim 13 (Previously amended). The method of claim 1 including:

providing the small position separation between normal sync pulses and respective AGC pulses; and

position modulating the AGC pulses while maintaining said modified position separation between the normal sync pulses and the respective AGC pulses which reduces the effects of the copy protection signals.

Claim 14 (Previously amended). The method of claim 1 wherein the step of shifting includes:

reversing the order of at least portions of the sync/pseudo sync pulses and respective AGC pulses while maintaining said modified position separation.

Claim 15 (Previously amended). The method of claim 1 wherein the step of shifting includes:

phase shifting at least portions of the sync/pseudo sync pulses and the respective AGC pulses 180 degrees.

Claim 16 (Previously amended). Apparatus for reducing the effects of copy protection signals in one or more selected video lines of a video signal being supplied to a recorder or television (TV) set, wherein the copy protection signals include sync and/or pseudo sync pulses together with respective automatic gain control (AGC) pulses, with the sync/pseudo sync pulses having a given small position separation, which can be zero separation, from the respective AGC pulses, comprising:

an input supplying the copy protected video signal with the trailing edge of the sync or pseudo sync pulses and the leading edge of the respective AGC pulses having the given small position separation which maintains the copy protection effect;

timing circuitry responsive to the input and providing timing signals coincident with one or more portions of the copy protection signals and indicative of one or more video lines containing sync/pseudo sync and respective AGC pulses; and

a modifying circuit responsive to the timing circuitry and shifting a position of the sync/pseudo sync pulses or of the respective AGC pulses on said line so as to provide a modified position separation between the trailing edge of the sync or pseudo sync pulses and the leading edge of respective AGC pulses which is of sufficient position separation to reduce or defeat the effects of the copy protection signals.

Claim 17 (Previously amended). The apparatus of claim 16 wherein:

the timing circuitry includes a sync separating circuit and provides selected sync signals; and

a timing circuit responsive to the sync separating circuit and which provides the timing signals;

wherein the modifying circuit includes a delay circuit which delays one or more portion of the copy protected video signal; and

wherein the apparatus further includes a switching circuit which inserts the delayed AGC pulses into the copy protected video signal in response to the timing signals.

Claim 18 (Previously amended). The apparatus of claim 16 wherein:

the timing circuitry includes a sync separating circuit which provide selected sync signals; and

a timing circuit responsive to the sync separating circuit to provide the timing signals;

wherein the modifying circuit includes a logic circuit responsive to the timing circuit to provide a control signal indicative of the presence of the copy protection signals and of said modified position separation; and

a switching circuit receiving the copy protected video signal for inserting the pulses having the modified position separation into the copy protected video signal in response to the control signal, to modify the widths of the sync/pseudo sync pulses and/or the respective AGC pulses.

Claim 19 (Previously amended). The apparatus of claim 16 further comprising:
a chroma filter receiving the copy protected video signal and which inserts color burst into the video signal.

Claim 20 (Previously amended). Apparatus for reducing the effects of copy protection signals of a video signal being supplied to a recorder or television set, wherein the copy protection signals include sync/pseudo sync and respective automatic gain control (AGC) pulse pairs comprising:

an input supplying the copy protected video signal with the sync/pseudo sync pulses and the respective AGC pulses;

timing circuitry responsive to the input and providing timing signals coincident with one or more portions of the copy protection signals; and

a modifying circuit for modifying the copy protected video signal, wherein the one or more portion of the modified copy protection signal is altered in reverse order in response to the timing signals to provide altered pulse pairs which defeat or reduce the effect of the copy protection signals.

Claim 21 (Previously amended). The apparatus of claim 20 wherein the copy protected video signal reversing process is implemented for all or selected portions of all or a selected plurality of the sync/pseudo sync pulses and/or respective AGC pulses.

Claim 22 (Previously amended). Apparatus for reducing the effects of copy protection signals of a video signal being supplied to a recorder or television set, wherein the

copy protection signals include sync/pseudo sync and respective automatic gain control (AGC) pulse pairs, comprising:

- an input supplying the copy protected video signal having the sync/pseudo sync pulses and the respective AGC pulses which maintain the copy protection effect;
- timing circuitry responsive to the input and providing timing signals coincident with one or more portion of the copy protection signals;
- a modifying circuit including an inverting amplifier/phase shifter circuit receiving the copy protected video signal and responsive thereto to provide inverted/phase shifted sync/pseudo sync pulses and respective AGC pulses to modify one or more portion of the original sync/pseudo sync and respective AGC pulses.

Claim 23 (Previously amended). The apparatus of claim 22 including:

- a second source of a second control voltage;
- level shifter/attenuator means receiving the output of the modifying circuit and responsive to the second control voltage for level shifting/attenuating the inverted/phase shifted sync/pseudo sync pulses and respective AGC pulses.

Claim 24 (Previously amended). A method of synthesizing copy protection signals in a video signal, employing sync and/or pseudo sync pulses followed by respective automatic gain control (AGC) pulses, comprising:

- providing the sync or pseudo sync pulses with the trailing edges thereof generally coincident with the leading edges of respective AGC pulses thereby having essentially small to zero position separation consistent with maintaining copy protection;

dynamically increasing over time the position separation between the sync/pseudo sync pulses and the respective AGC pulses so as to reduce or defeat the effects of the copy protection signals; and

dynamically decreasing over time the position separation between the sync/pseudo sync pulses and the respective AGC pulses to return to the essentially small to zero position separation to maintain copy protection.

Claim 25 (Previously amended). The method of claim 24 including:

dynamically varying the position separation between at least one sync/pseudo sync pulse and at least one respective AGC pulse from the essentially small to zero position separation to a position separation in the region of 1.5 to 5.0 microseconds.

Claim 26 (Original). The method of claim 24 including:

dynamically varying the position separation by dynamically varying the advancement of the trailing edge of the sync/pseudo sync pulses with respect to the respective AGC pulses.

Claim 27 (Original). The method of claim 24 including:

dynamically varying the position separation by dynamically varying the delay of the leading edge of the AGC pulses with respect to the respective sync/pseudo sync pulses.

Claim 28 (Previously amended). The method of claim 24 including:

dynamically varying the position separation by dynamically varying the advancement of the sync/pseudo sync pulses while dynamically varying the delay of the respective AGC pulses.

Claim 29 (Previously amended). The method of claim 24 including:

dynamically varying the position separation by dynamically varying the pulse width or the pulse width duration of the AGC pulses and/or of the sync/pseudo sync pulses.

Claim 30 (Previously amended). The method of claim 24 including:

dynamically narrowing any portion or all of the AGC pulses and/or the sync/pseudo sync pulses.

Claim 31 (Previously amended). Apparatus for synthesizing copy protection signals in a video signal employing sync and/or pseudo sync pulses followed by respective automatic gain control (AGC) pulses, comprising:

timing circuitry receiving the video signal and which provides timing signals indicative of video lines which are to contain the copy protection signals, and of the location in the video lines of selected copy protection signals;

a generating circuit to generate selectively derived and modulated pseudo sync pulses, which are modulated in response to the timing circuitry, and which generate AGC pulses that vary in width and/or position in response to the respective selectively derived and modulated pseudo sync pulses; and

a summing/inserting circuit receiving the video signal and responsive to the generating circuit and the timing circuitry to add or insert to the video signal a dynamic copy protection signal formed of the pseudo sync pulses and the respective width and/or position modulated AGC pulses.

Claim 32 (Previously amended). The apparatus of claim 31 wherein:

the timing circuitry includes a sync separating circuit to provide a horizontal rate (H rate) signal;

a first circuit responsive to the H rate signal to provide a first signal which defines a positive pulse duration of an H rate related signal;

a timing generator responsive to the H rate signal and which provides a second signal indicative of the location of sync pulses in a video line;

a line circuit responsive to the H rate signal to provide a third signal indicative of the video lines which are to contain the copy protection signals; and

a logic circuit responsive to the first, second and third signals to provide inverted pseudo sync pulses on selected video lines;

wherein the generating circuit includes a timer circuit responsive to control voltages to provide said AGC pulses that are varying in width and in position; and

the summing/inserting circuit includes a summing amplifier receiving the video signal and responsive to said selectively derived pseudo sync pulses and said width and position varying AGC pulses, wherein the summing/inserting circuit provides the position modulated AGC pulses in combination with the derived pseudo sync pulses, resulting in a dynamically varying copy protected video signal.

Claim 33 (Previously amended). The apparatus of claim 32 wherein:

said first circuit includes an H locked oscillator responsive to the H rate signal;

said line circuit includes a memory responsive to a line counter;

said timer circuit includes a pair of voltage controlled circuits; and

said summing amplifier includes first and second summing amplifiers responsive to said derived pseudo sync pulses and said respective width and position delay varying AGC pulses.

Claim 34 (Previously amended). Apparatus for synthesizing copy protection signals in a video signal employing sync and/or pseudo sync pulses followed by respective automatic gain control (AGC) pulses, comprising:

a generating circuit for providing the respective AGC pulses within at least a portion of a back porch; and

wherein said generating circuit dynamically positions and/or width modulates the respective back porch AGC pulses.

Claim 35 (Previously amended). The apparatus of claim 31 wherein:

the copy protection signals include sync, pseudo sync, AGC and/or raised back porch AGC pulses; and

said generating circuit provides dynamic position, pulse width and/or gap width modulation of the pulses.

Claim 36 (Previously amended). A method of providing copy protection signals in a video signal and for reducing the effects or effectiveness of the copy protection signals when desired, wherein the copy protection signals include sync and/or pseudo sync pulses and respective automatic gain control (AGC) pulses, comprising:

providing the sync/pseudo sync pulses with the trailing edges thereof coincident with, or separated by less than 1.0 microsecond from, the leading edges of respective AGC pulses to provide the copy protection signals; and

position separating relative to time the sync/pseudo sync pulses relative to the respective AGC pulses sufficient to provide the reduction in the effects or effectiveness of the copy protection signals.

Claim 37 (Previously added). The method of claim 1 wherein the modified position separation caused by the shifted positions of the sync/pseudo sync pulses relative to the respective AGC pulses provides the reduction in the effects of the copy protection signals in the recorder or TV set which may include allowing a recording of a viewable copy of the video signal.

Claim 38 (Previously added). The apparatus of claim 16 wherein the modified position separation provided by the modifying circuit causes the reduction in the effects of the copy protection signals in the recorder or TV set which may include allowing a recording of a viewable copy of the video signal.

Claim 39 (Previously added). A method of reducing the effects or effectiveness of copy protection signals in one or more selected video lines of a video signal being supplied to a recorder or television (TV) set, wherein the copy protection signals include negative going pulses and respective positive going pulses, with the negative going pulses having a given small position separation, which may be zero separation, from the respective positive going pulses, comprising:

providing the negative going pulses with the trailing edge thereof having the small position separation from the leading edge of respective positive going pulses, wherein the small position separation maintains the copy protection effect; and

shifting the relative position of either the trailing edge of the negative going pulses or the leading edge of the respective positive going pulses with respect to each other, or shifting the relative positions of the trailing edge of the negative going pulses and the leading edge of the respective positive going pulses, to provide a modified position separation between the trailing edge of the negative going pulses and the leading edge of the respective positive going pulses sufficient to reduce the effects of the copy protection signals.

Claim 40 (Previously added). Apparatus for reducing the effects or effectiveness of copy protection signals in one or more selected video lines of a video signal being supplied to a recorder or television (TV) set, wherein the copy protection signals include negative going pulses and respective positive going pulses, with the negative going pulses having a given small position separation, which may be zero separation, from the respective positive going pulses, comprising:

input means supplying the copy protected video signal with the trailing edge of the negative going pulses and the leading edge of the respective positive going pulses having the given small position separation which maintains the copy protection effect;

timing circuitry responsive to the input means and providing timing signals coincident with one or more portions of the copy protection signals and indicative of one or more video lines containing the negative going pulses and the respective positive going pulses; and

circuit means responsive to the timing circuitry and shifting the relative edges and/or positions of the negative going pulses and of the respective positive going pulses with respect

to each other so as to provide a modified position separation between the trailing edge of the negative going pulses and the leading edge of the positive going pulses which is of sufficient position separation to reduce or defeat the effects of the copy protection signals.

Claim 41 (Previously added). The method of claim 1 wherein the AGC pulses are raised back porch AGC pulses which are position modulated.

Claim 42 (Previously added). The method of claim 30 wherein the pulse width of the sync/pseudo sync and/or AGC pulses are narrowed in the region of 100 percent to 50 percent.

Claim 43 (Previously added). The method of claim 24 wherein only the AGC pulses are shifted in position continuously or discretely.

Claim 44 (Previously added). The method of claim 24 further comprising:
dynamically amplitude modulating the sync, pseudo sync and/or the AGC pulses.

Claim 45 (Previously added). The method of claim 24 further comprising:
narrowing any portion of the sync, pseudo sync and/or AGC pulses.

Claim 46 (Previously added). The method of claim 24 wherein the AGC pulses are shifted in position or are narrowed continuously or discretely to dynamically enable and disable the copy protection signals.

Claim 47 (Previously added). The method of claim 24 wherein the position separation or gap between the sync or pseudo sync pulse and the respective AGC pulse is gap width modulated.

Claim 48 (Previously added). The method of claim 24 wherein:
the dynamic increasing and decreasing of the position separation comprises position and/or pulse width modulating the sync/pseudo sync and/or the AGC pulses; and
amplitude modulating the position and/or pulse width modulated sync/pseudo sync and/or AGC pulses.

Claim 49 (Previously added). A method of synthesizing copy protection signals in a video signal, employing sync and/or pseudo sync pulses followed by respective automatic gain control (AGC) pulses and/or raised back porch AGC pulses, comprising:

dynamically modulating at least one or a selected combination of a position, gap width, pulse width or amplitude of one or more of selected pulses of the sync, pseudo sync, AGC and/or raised back porch AGC pulses so as to synthesis the copy protection signals.

Claim 50 (Previously added). The method of claim 49 further including selected raised back porch pulses, wherein the selected raised back porch pulses are position modulated or position delayed to assist in said synthesis.

Claim 51 (Previously added). The method of claim 49 wherein only the AGC or raised back porch AGC pulses are position and/or pulse width modulated.

Claim 52 (Previously added). The method of claim 49 wherein only the sync and/or pseudo sync pulses are position and/or pulse width modulated.

Claim 53 (Previously added). A method of synthesizing copy protection signals in a video signal, employing sync, pseudo sync and respective automatic gain control (AGC) pulses, comprising:

dynamically modulating the position, pulse width and/or gap width of the AGC pulses or of the sync/pseudo sync and respective AGC pulses, wherein a single AGC and/or pseudo sync pulse is modulated.

Claim 54 (Previously added). The method of claim 53 wherein the modulating includes amplitude modulation.

Claim 55 (Previously added). The method of claim 53 wherein any of a selected number and arrangement of AGC pulses are modulated to enable and disable the copy protection signal.